

**IN THE CLAIMS**

1-28 (Canceled)

29. (Currently Amended) A computer-implemented method of finding queries having greatest-valued or least-valued results, comprising the steps of:

receiving at the computer a user query consisting of at least one computation and an attribute-value list having one or more elements, each element being associated with an attribute having a value assigned by a user or a user process;

determining queries in a plurality of queries having said at least one computation and sharing one or more elements in common with the user query to provide a set of related queries;

computing a result of said at least one computation for the attribute-valued string associated with each query in said set of related queries; and

comparing the results associated with said set of related queries to determine one or more queries having the greatest-valued result, or one or more queries having the least-valued result.

30. (Original) The method of claim 29, wherein the step of receiving comprises the steps of:

selecting said at least one computation from a plurality of computations in response to a user or user process input;

selecting one or more attributes from a plurality of attributes in response to the user input; and

selecting a value for each attribute selected in response to the user input to form an element.

31. (Currently Amended) The method of claim 30, wherein said at least one computation defines a relationship between said plurality of queries and a plurality of results.

32. (Currently Amended) The method of claim 31, wherein the results associated with said set of related queries are numeric results.

33. (Currently Amended) The method of claim 32, further comprising the step of selecting one query as the query having ~~the greatest-valued~~ a maximum result if it is determined that more than one query in said set of related queries has the greatest-valued result.
34. (Previously presented) The method of claim 33, further comprising the step of generating a list of queries having said at least one computation, each query being associated with an attribute-valued string having the greatest-valued result of all queries in said plurality of queries sharing one or more elements in common with a preceding query or a succeeding query in said list of queries.
35. (Currently Amended) The method of claim 34, wherein said list of queries yields a non-decreasing succession of numeric results and wherein the step of generating a list of queries comprises the steps of:
- (a) adding the query in said set of related queries having the greatest-valued result as a last query in said list of queries;
  - (b) determining queries in said plurality of queries having said at least one computation and sharing one or more elements in common with said last query to provide a set of queries related to said last query;
  - (c) computing a result of said at least one computation for the attribute-valued string associated with each query in said set of queries related to said last query;
  - (d) comparing the results associated with said set of queries related to said last query to determine one or more queries having the greatest-valued result;
  - (e) selecting one query as the query having ~~the greatest-valued~~ a maximum result if it is determined that more than one query in said set of queries related to said last query has the greatest-valued result;
  - (f) adding the query having the ~~greatest-valued~~ maximum result to the end of said list of queries as a new last query if it is determined that said new last query is not equivalent to said last query; and

(g) repeating steps (b) through (f) until there is no query in said plurality of queries having a result greater than the last query and sharing one or more elements in common with the last query.

36. (Currently Amended) The method of claim 32, further comprising the step of selecting one query as the query having ~~the least-valued~~ a minimum result if it is determined that more than one query in said set of related queries has the least-valued result.
37. (Previously presented) The method of claim 36, further comprising the step of generating a list of queries having said at least one computation, each query being associated with an attribute-valued string having the least-valued result of all queries in said plurality of queries sharing one or more elements in common with a preceding query or a succeeding query in said list of queries.
38. (Currently Amended) The method of claim 37, wherein said list of queries yields a non-increasing succession of numeric results and wherein the step of generating a list comprises the steps of:
  - (a) adding the query in said set of related queries having the least-valued result as a last query in said list;
  - (b) determining queries in said plurality of queries having said at least one computation and sharing one or more elements in common with said last query to provide a set of queries related to said last query;
  - (c) computing a result of said at least one computation for the attribute-valued string associated with each query in said set of queries related to said last query;
  - (d) comparing the results associated with said set of queries related to said last query to determine one or more queries having the least-valued result;
  - (e) selecting one query as the query having ~~the least-valued~~ a minimum result if it is determined that more than one query in said set of queries related to said last query has the least-valued result;

(f) adding the query having the ~~least-valued~~ minimum result to end of said list as a new last query if it is determined that said new last query is not equivalent to the last query; and

(g) repeating steps (b) through (f) until there is no query in said plurality of queries having a result less than the last query and sharing one or more elements in common with the last query.

39. (Previously presented) The method of claim 29, further comprising the step of:

(a) assigning one query from said set of related queries as a first query;

(b) determining queries in said plurality of queries having said at least one computation and sharing one or more elements in common with said first query to provide a set of queries related to said first query;

(c) computing a result of said at least one computation for the attribute-valued string associated with each query in said set of queries related to said first query;

(d) comparing the results associated with said set of queries related to said first query to determine one or more queries having the greatest-valued result, or one or more queries having the least-valued result;

(e) assigning another query in said set of related queries as said first query; and

(f) repeating steps (b) through (e) for every query in said set of related queries.

40. (Original) The method of claim 39, wherein the step (d) further comprises the steps of determining whether said first query has the greatest-valued result or the least-valued result.

41. (Original) The method of claim 29, further comprising the step of generating pre-computed greatest-valued and pre-computed least-valued lists by pre-determining for each query in said plurality of queries whether said each query has a greatest-valued result or a least-valued result for all queries in said plurality of queries having said at

least one computation and sharing one or more elements in common with said each query.

42. (Original) The method of claim 41, further comprising the steps of:  
determining whether any query in said set of related queries is in said pre-computed greatest-valued list to provide a set of max queries; and  
determining whether any query in said set of related queries is in said pre-computed least-valued list to provide a set of min queries.
43. (Original) The method of claim 29, further comprising the step of displaying the user query and the result of the user query along with the greatest-valued result and one or more queries having the greatest-valued result.
44. (Original) The method of claim 43, wherein the step of displaying further displays the least-valued result and one or more queries having the least-valued result.
45. (Original) The method of claim 35, further comprising the step of displaying the user query and the result of the user query along with each query and the corresponding greatest-valued result in said list.
46. (Original) The method of claim 38, further comprising the step of displaying the user query and the result of the user query along with each query and the corresponding least-valued result in said list.
47. (Original) The method of claim 40, wherein the step (d) further comprises the step of displaying the user query and the result of the user query along with said first query and the corresponding greatest-valued result if it is determined that said first query has the greatest-valued result.
48. (Original) The method of claim 47, wherein the step displaying further displays said first query and the corresponding least-valued result if it determined that said first query has the least-valued result.

49. (Original) The method of claim 42, further comprising the steps of:
  - determining whether any query in said pre-computed greatest-valued list is not in said set of max queries; and
  - determining whether any query in said pre-computed least-valued list is not in said set of min queries.
50. (Currently Amended) A computer implemented method of finding queries having greatest-valued or least-valued results from a plurality of queries, each query having at least one computation and consisting of attribute-valued string having one or more elements, each element being associated with an attribute having a value, comprising the steps of:
  - generating pre-computed greatest-valued and pre-computed least-valued lists for each computation in a plurality of computations by:
    - pre-determining queries in said plurality of queries having said each computation to provide a set of computationally related queries; and
    - pre-determining for each query in said set of computationally related queries whether said each query has the greatest-valued result or the least-valued result for all queries in said set of computationally related queries sharing one or more elements in common with said each query;
  - receiving at the computer a user query consisting of at least one computation and one or more elements assigned by a user or user process;
  - selecting said pre-computed greatest-valued list and said pre-computed least-valued list associated with said at least one computation of the user query;
  - determining queries in said selected pre-computed greatest-valued list sharing one or more elements in common with the user query to provide one or more queries having corresponding greatest-valued results to provide a set of max queries; and
  - determining queries in said selected pre-computed least-valued list sharing one or more elements in common with the user query to provide one or more queries having corresponding least-valued results to provide a set of min queries.

51. (Original) The method of claim 50, wherein each computation in said plurality of computation defines a relationship between said plurality of queries and a plurality of results.
52. (Original) The method of claim 50, further comprising the step of displaying the user query and the result of the user query along with each query and the corresponding greatest-valued result in said set of max queries.
53. (Original) The method of claim 52, wherein the step of displaying displays each query and the corresponding least-valued result in said set of min queries.
54. (Currently Amended) A computer implemented method of finding queries having greatest-valued or least-valued results from a plurality of queries, comprising the steps of:
  - (a) receiving at the computer a user query consisting of a plurality of computations and an attribute-valued string having one or more elements, each element being associated with an attribute having a value assigned by a user;
  - (b) assigning one computation from said plurality of computations as a first computation;
  - (c) determining queries in said plurality of queries having said first computation to provide a set of computationally related queries;
  - (d) determining queries in said set of computationally related queries sharing one or more elements in common with the user query to provide a set of related queries;
  - (e) computing a result of said first computation for the attribute-valued string associated with each query in said set of related queries;
  - (f) comparing the results associated with said set of related queries to determine one or more queries having the greatest-valued result or one or more queries having the least-valued result;
  - (g) assigning another computation from said plurality of computations as said first computation; and

(h) repeating steps (f) through (g) for every computation in said plurality of computations.

55. (Previously presented) The method of claim 54, wherein the step (d) further comprises the steps of:

(i) assigning one query from said set of related queries as a first query;

(j) determining queries in said set of computationally related queries sharing one or more elements in common with said first query to provide a set of queries related to said first query;

(k) computing a result of said first computation for the attribute-valued string associated with each query in said set of queries related to said first query;

(l) comparing the results associated with said set of queries related to said first query to determine one or more queries having the greatest-valued result, or one or more queries having the least-valued result;

(m) assigning another query in said set of related queries as said first query; and

(n) repeating steps (j) through (m) for every query in said set of related queries.

56. (Original) The method of claim 55, wherein the step (l) further comprises the step of determining whether said first query has the greatest valued-result or the least-valued result.

57. (Currently Amended) ~~Apparatus~~ A computer system for finding queries having greatest-valued or least-valued results, comprising:

an input device for receiving a user query consisting of at least one computation and an attribute-value having one or more elements, each element being associated with an attribute having a value assigned by a user;

a computing device for determining queries in said plurality of queries having said at least one computation and one or more elements in common with the user query to provide a set of related queries, and ~~; a computing device for computing a~~



result of said at least one computation for the attribute-valued string associated with each query in said set of related queries; and

a comparator for comparing the results associated with said set of related queries to determine one or more queries having the greatest-valued result or one or more queries having the least-valued result.

58. (Currently Amended) The ~~apparatus~~ system of claim 57, wherein said input device ~~for receiving~~ is operable to select said at least one computation from a plurality of computations in response to a user or user process input, to select one or more attributes from a plurality of attributes in response to the user input, and to select a value for each attribute selected in response to the user input to form an element.
59. (Currently Amended) The ~~apparatus~~ system of claim 58, wherein said at least one computation defines relationship between said plurality of queries and a plurality of results.
60. (Currently Amended) The ~~apparatus~~ system of claim 59, wherein the results associated with said set of related queries are numeric results.
61. (Currently Amended) The ~~apparatus~~ system of claim 60, further comprising a selecting device for selecting one query as the query having ~~the greatest-valued~~ a maximum result if it is determined that more than one query in said set of related queries has the greatest-valued result.
62. (Currently Amended) The ~~apparatus~~ system of claim 61, further comprising a generating device for generating a list of queries having said at least one computation, each query being associated with an attribute-valued string having the greatest-valued result of all queries in said plurality of queries sharing one or more elements ~~for~~ in common with a preceding query or a succeeding query in said list of queries.
63. (Currently Amended) The ~~apparatus~~ system of claim 62, wherein said list of queries yields a non-decreasing succession of numeric results and wherein said generating device comprises a control device for adding the query having the greatest-valued

result as a last query in said list of queries, for operating said computer device ~~for determining~~ to determine queries in said plurality of queries having said at least one computation and sharing one or more elements in common with said last query to provide a set of queries related to said last query, ~~for operating said computing device~~ and to compute a result of said at least one computation for the attribute-valued string associated with each query in said set of queries related to said last query, for operating said comparator to compare the results associated with said set of queries related to said last query to determine one or more queries having the greatest-valued result, for selecting one query as the query having the greatest-valued a maximum result if it is determined that more than one-query in said set of queries related to said last query has the greatest-valued result, and for adding the query having the greatest-valued maximum result to end of said list of queries as a new last query if it is determined that said new last query is not equivalent to said last query.

64. (Currently Amended) The apparatus system of claim 60, further comprising a selecting device for selecting one query as the query having ~~the least-valued a~~ minimum result if it is determined that more than one query in said set of related queries has the least-valued result.
65. (Currently Amended) The apparatus system of claim 64, further comprising a generating device for generating a list of queries having said at least one computation, each query being associated with an attribute-valued string having the least-valued result of all queries in said plurality of queries sharing one or more elements in common with a preceding query or a succeeding query in said list of queries.
66. (Currently Amended) The apparatus system of claim 65, wherein said list of queries yields a non-decreasing succession of numeric results and wherein said generating device comprises a control device for adding the query in said of related queries having the least-valued result as a last query in said list of queries for operating said computing device ~~for determining~~ to determine queries in said plurality of queries having said at least one computation and ~~share~~ sharing one or more elements in

common with said last query to provide a set of queries related to said last query, ~~for operating said computing device and~~ to compute a result of said at least one computation for the attribute-valued string associated with each query in said set of queries related to said last query, for operating said comparator to compare the results associated with said set of queries related to said last query to determine one or more queries having the least-valued result, for selecting one query as the query having ~~the least-valued~~ a minimum result if it is determined that more than one query in said set of queries related to said last query has the least-valued result, and for adding the query having the least-valued result to end of said list of queries as a new last query if it is determined that said new last query is not equivalent to said last query.

67. (Currently Amended) The ~~apparatus~~ system of claim 57, further comprising a control device for assigning one query from said set of related queries as a first query, for operating said computing device for determining to determine queries in said plurality of queries having said at least one computation and sharing one or more elements in common with said first query to provide a set of queries related to said first query, ~~for operating said computing device and~~ to compute a result of said at least one computation for the attribute-valued string associated with each query in said set of queries related to said first query, for operating said comparator to compare the results associated with said set of queries related to said first query to determine one or more queries having the greatest-valued result, or one or more queries having the least-valued result, and for assigning another query in said set of related queries as said first query.
68. (Currently Amended) The ~~apparatus~~ system of claim 67, wherein said control device is operable to control said device ~~for determining~~ to determine whether said first query has the greatest-valued result or the least-valued result.
69. (Currently Amended) The ~~apparatus~~ system of claim 57, further comprising :  
 a pre-computing device for generating pre-computed greatest-valued and pre-computed least-valued lists by pre-determining for each query in said plurality of

queries whether said each query has the greatest-valued result or the least-valued result for all queries in said plurality of queries having said at least one computation and sharing one or more elements in common with said each query; and

a storing device for storing said pre-computed greatest-valued and pre-computed least-valued results.

70. (Currently Amended) The ~~apparatus~~ system of claim 69, wherein said control device is operable to operate said computing device ~~for determining~~ to determine whether any query in said set of related queries is in said pre-computed greatest-valued list to provide a set of max queries and to determine whether any query in said set of related queries is in said pre-computed least-valued list to provide a set of min queries.
71. (Currently Amended) The ~~apparatus~~ system of claim 57, further comprising a display device for displaying the user query and the result of the user query along with the greatest-valued result and one or more queries having the greatest-valued result.
72. (Currently Amended) The ~~apparatus~~ system of claim 71, wherein said display device is operable to display the least-valued result and one or more queries having the least-valued result.
73. (Currently Amended) The ~~apparatus~~ system of claim 63, further comprising a display device for displaying the user query and the result of the user query along with each query and the corresponding greatest-valued result in said list.
74. (Currently Amended) The ~~apparatus~~ system of claim 66, further comprising a display device for displaying the user query and the result of the user query along with each query and the corresponding least-valued result in said list.
75. (Currently Amended) The ~~apparatus~~ system of claim 70, wherein said control device is operable to operate said computing device ~~for determining~~ to determine whether any query in said pre-computed greatest-valued list is not in said set of max queries

and to determine whether any query in said pre-computed least-valued list is not in said set of min queries.

76. (Currently Amended) ~~Apparatus~~ A system for finding queries having greatest-valued or least-valued results from a plurality of queries, each query having at least one computation and consisting of an attribute-valued string having one or more elements, each element being associated with an attribute having a value comprising:

a pre-computing device for generating pre-computed greatest-valued and pre-computed least-valued lists for each computation in a plurality of computations by pre-determining queries in said plurality of queries having said each computation to provide a set of computationally related queries and pre-determining for each query in said set of computationally related queries whether said each query has the greatest-valued result or the least-valued result for all queries in said set of computationally related queries sharing one or more elements in common with said each query;

a receiver for receiving a user query consisting of at least one computation and one or more elements assigned by a user or user process;

a selector for selecting said pre-computed greatest-valued list and said pre-computed least-valued list associated with said at least one computation of the user query; and

a computing device for determining queries in said selected pre-computed greatest-valued list sharing one or more elements in common with the user query to provide one or more queries having corresponding greatest-valued results to provide a set of max queries and determining queries in said selected pre-computed least-valued list sharing one or more elements in common with the user query to provide one or more queries having corresponding least-valued results to provide a set of min queries.

77. (Currently Amended) The ~~apparatus~~ system of claim 76, wherein each computation in said plurality of computation defines a relationship between said plurality of queries and a plurality of results.

78. (Currently Amended) The ~~apparatus~~ system of claim 76, further comprising a display device for displaying the user query and the result of the user query along with each query and the corresponding greatest-valued result in said set of max queries.
79. (Currently Amended) The ~~apparatus~~ system of claim 76, wherein the step of displaying displays each query and the corresponding least-valued result in said set of min queries.
80. (Currently Amended) The ~~apparatus~~ system of claim 79, wherein said computing device is operable to compute results for sports data
81. (Currently Amended) The ~~apparatus~~ system of claim 79, wherein said computing device is operable to compute results for call center data.
82. (Currently Amended) The ~~apparatus~~ system of claim 79, wherein said computing device is operable to compute results for customer relationship management data.
83. (Currently Amended) The ~~apparatus~~ system of claim 79, wherein said computing device is operable to compute results for banking data.
84. (Currently Amended) The ~~apparatus~~ system of claim 79, wherein said computing device is operable to compute results for multimedia data.
85. (Currently Amended) The ~~apparatus~~ system of claim 79, wherein said computing device is operable to compute results for textual data.
86. (Currently Amended) The ~~apparatus~~ system of claim 80, wherein said sports data includes tennis data.
87. (Currently Amended) The ~~apparatus~~ system of claim 80, wherein said sports data includes soccer data.

88. (Currently Amended) The ~~apparatus~~ system of claim 80, wherein said sports data includes golf data.
89. (Currently Amended) The ~~apparatus~~ system of claim 80, wherein said sports data includes football data.
90. (Currently Amended) The ~~apparatus~~ system of claim 80, wherein said sports data includes basketball data.
91. (Currently Amended) The ~~apparatus~~ system of claim 80, wherein said sports data includes baseball data.
92. (Currently Amended) The ~~apparatus~~ system of claim 80, wherein said sports data includes cricket data.
93. (Currently Amended) ~~Apparatus~~ A system of finding queries having greatest-valued or least-valued result from a plurality of queries, comprising:
  - a receiver for receiving a user query consisting of a plurality of computations and an attribute-valued string having one or more elements, each element being associated with an attribute having a value assigned by a user;
  - an assigning device for assigning one computation from said plurality of computation as a first computation;
  - a computing device for determining queries in said plurality of queries having said first computation to provide a set of computationally related queries and determining queries in said set of computationally related queries sharing one or more elements in common with the user query to provide a set of related queries, and ~~;-a~~ ~~company device~~ for computing a result of said first computation for the attribute-valued string associated with each query in said set of related queries;
  - a comparator for comparing the results associated with said set of related queries to determine one or more queries having the greatest-valued result or one or more queries having the least-valued result; and

a control device for controlling said assigning device ~~for assigning~~ to assign another computation from said plurality of computations as said first computation.

94. (Currently Amended) The ~~apparatus~~ system of claim 93, wherein said control device is operable to operate said assigning device ~~for assigning~~ to assign one query from said set of related queries as a first query, for operating said computing device ~~for determining~~ to determine queries in said set of computationally related queries sharing one or more elements in common with said first query to provide a set of queries related to said first query, ~~for operating said computing device and~~ to compute a result of said first computation for the attribute-valued string associated with each query in said set of queries related to said first query, for operating said comparator to compare the results associated with said set of queries related to said first query to determine one or more queries having the greatest-valued result, or one or more queries having the least-valued result, and for operating said device for assigning to assign another query in said set of related queries as said first query.
95. (Currently Amended) The ~~apparatus~~ system of claim 94, wherein said comparator is operable to determining whether said first query has the greatest valued-result or the least-valued result.
96. (Currently Amended) ~~Apparatus~~ A system of finding queries having greatest-valued or least-valued results from a plurality of queries, comprising:
  - a receiver for receiving a plurality user queries, each user query being associated with a different user or user process and consisting of at least one computation and an attribute-valued string having one or more elements, each element being associated with an attribute having a value assigned by the associated user;
  - a computing device for determining queries in said plurality of queries having said at least one computation and sharing one or more elements in common with the user query to provide a set of related queries, and ; ~~a computing device for computing~~



a result of said first computation for the attribute-valued string associated with each query in said set of related queries;

a comparator for comparing the results associated with said set of related queries to determine one or more queries having the greatest-valued result or one or more queries having the least-valued result; and

a control device for controlling said device for assisting to assign another computation from said plurality of computations as said first computation.